Build a spruce coffee table for $25

Gary Walchuk accepts our $25 challenge and builds this beauty on a budget.

By Gary Walchuk

Turning $25 worth of materials into a great project might seem like an impossible task. But I've always believed that the best projects are based on inventive designs and the best use of woodworking skills, not necessarily expensive wood. This coffee table proves it.

I decided to work with construction-grade spruce because it's so economical. I selected the best-looking boards from the lumber store.

Instructions

The Starting Line

Collect choice spruce boards and lay them out on your workbench. The wood I used all started out at 1 1/2" thick. Lay out enough stock to make all the pieces required for the tabletop. Use a planer to bring down the thickness of the parts to 1 3/8". This step will make your boards straight, true and flat-ready for cutting the top slats, top sides and top ends. Use a stop block on your tablesaw or mitre saw to get the exact, matching lengths for each of these parts. Although these are all listed as 2 1/2" wide, leave them slightly wider for now. The extra width may come in handy later when you're fitting the slats in the tabletop.

Next, clamp together the top sides, face to face with their inside edges facing up. Mark the location where all the 2 1/2"-wide top slats connect to both of the top side pieces in a notch. The plans show how each pair of slats needs a 1/2" space between them. Use a square and pencil to make a line directly across both edges, showing where each edge of each slat belongs.

Keep the top sides clamped together while you cut 1/2"-deep kerfs across the inside edges. I used a radial-arm saw for this job, cutting to define each side of the notch. Pay close attention to the layout lines you drew earlier: the notches need to be exactly 2 1/2" wide.

Although I could have chosen to remove the waste from within each notch with the radial-arm saw, I used a bandsaw instead. It will make a smoother cut in this application. I set the bandsaw fence for 1/2" (the depth of the notches), then removed wedge-shaped pieces of wood, first from one side of each notch, then the other. Continue flipping the stock end-for-end, and by the fourth or fifth pass, you'll have a flat-bottomed notch with straight edges.

Next, on the side edges only, carefully lay out and cut the mitred ends to shape. Then, on the outside edges of all four edge parts, rout 3/4"-wide x 1/4"-deep grooves, on centre. These accommodate the fill strips that will be installed after the top is assembled. They are meant to hide the screws that secure the slats.

Top Notch

Dry-fit the slats you cut earlier into the notches on both side pieces. You may have to plane the width of the slats narrower to fit. Number the parts in sequence to make it easier to reassemble everything.

Predrill screw holes through the middle of the grooves in the top side pieces, then join all the slats to one top side edge using #10 x 3" wood screws without glue. Repeat to attach the other opposite top side. This dry-fit is meant to see how everything comes together.

Cut the top ends, mitre their ends, then join these to the rest of the growing frame without glue. Remove all screws, apply glue to the joints, then reassemble everything permanently with screws. Be sure the screw heads are countersunk below the surface so they won't interfere when you glue the fill strips in place over top.

Cut the side and end fill strips to size and add a 1/16" chamfer along the top and bottom outside edges. Mitre their ends, then glue the fill strips into the tabletop grooves.

Touch Base

Set aside the tabletop assembly for now and concentrate on the base structure. For the posts, plane a 11/8"-thick length of stock to at least 21" long x 8" wide.

To get the right profile on the posts, look at the full-size template, or use the grid diagram to draw your own. Trace the shapes onto your wood, including the 11/2" x 2" rectangular cutouts for the stretcher, which you can make with a jigsaw. Cut each post to length, then to shape. Rout the bottom end of each post to create a 3/4" x 3/4" x 5" tenon that extends down into the foot assembly. Sand the posts to a finish-ready state.

Make the foot template the same way you did the post. Cut the feet to shape, then rout a 3/4"-deep x 3/4"-wide mortise on centre, along the top edge of both. This allows the feet to mate with tenons on the bottoms of the posts. Sand the feet smooth.

Cut the braces to size and round their bottom ends to a 11/4" radius. Drill 3/4"-diameter holes, 1/4" deep into the top surfaces of the braces, one centred and the others located 2" each side of centre. These will be deep enough to house

1/4" washers. Use a 1/4"-radius bit to make screw holes drilled through the braces. Centre each brace onto the top end of a post and secure them with washers and three 21/2"-long screws.

To attach the posts to the feet, pre-drill a hole to countersink a 1/4" x 5" lag bolt from the bottom of each foot and into the bottom edge of each post.

The stretcher spans the space between each post. Cut the stretcher to length and width. Locate the centre of the top edge of the stretcher, then measure and mark both locations at 147/16" and 1513/16" toward each end. At the 1513/16" marks, drill a 1/2"-diameter hole straight down through the stretcher from the centre of the top edge. These holes will accommodate the wedges later on. At the 147/16" marks, cut 1/4"-deep shoulders across the top and bottom surfaces of the stretcher. Use a bandsaw to remove the waste.

Cut two wedges to shape using the plans, then use a chisel to square up and taper the 1/2"-diameter hole you bored earlier through the stretcher. The goal here is to create a 1/2"-wide x 3/4"-long slotted hole at the top of the stretcher surface tapering to a 1/2" x 1/2" square hole remaining at the bottom surface. Make a full-size template to trace and cut the decorative stretcher ends to shape.

Apply the post and foot assemblies onto the stretcher ends. Tap in the wedges to secure the base assembly.

Final Fit and Finish

Lay the tabletop top-down on a flat surface. Next, centre the base onto the tabletop. The braces should be parallel and centred over the outermost tabletop slats. Install 2 1/2"-long screws from the underside of the braces and into the top, about 1 1/2" from the brace ends.

I sanded the entire project up to 220-grit paper, then finish it with three coats of satin wipe-on polyurethane, sanding lightly between coats.

Using construction-grade lumber for a project saves choice boards from the boring fate of being hidden away forever as joists or wall studs.

Choose Spruce

Search for the best pieces to get the most for your money!

Construction-grade spruce is often overlooked as a choice for furniture, mostly due to its reputation for twisting and being difficult to finish. Still, I remember a few projects by Steve Maxwell, CHW's technical editor, who more than once dared to build furniture from spruce.

There's at least one advantage to building with this wood: you'll probably get the most volume of stock for your dollar.

Most of us are familiar with spruce framing material that's available as 2x4s or in the larger widths for floor joists. Many pieces of this wood will have defects-knots, twists, warps, bows and wane-but not all. Take the time to go through the stock at your local lumberyard or hardware store. You often can find a real beauty and may come across some 2x8 and 2x10 planks that are free of defects for the same price as those right beside them.

Once you have your great wood at home, you'll need to dry it. Even kiln-dried construction-grade lumber will be too wet and unstable to build furniture with. Stack it in a dry, heated place, then let it sit there for two or three weeks, ideally, with a fan blowing on the wood. Or just let it sit for about a year on it's own. Straight-grain spruce stabilizes like a piece of extra-hard pine.

Tools and Materials

Part	Material	Size (T x W x L*)	Qty.
Top Sides	construction-grade spruce	1 3/8" x 2 1/2" x 38 1/2	2
Top ends	construction-grade spruce	1 3/8" x 2 1/2" x 16"	2
Top slats	construction-grade spruce	1 3/8" x 2 1/2" x 12"	11
Side fill strips	construction-grade spruce	5/16" x 3/4" 38 5/8"	2
End fill strips	construction-grade spruce	5/16" x 3/4" x 16 1/8"	2
Posts	construction-grade spruce	1 1/8" x 8" x 10 3/8"	2
Feet	construction-grade spruce	1 1/2" x 3 3/4" x 16"	2
Braces	construction-grade spruce	1 1/4" x 1 1/2" x 13"	2
Stretcher	construction-grade spruce	1 1/2" x 2 1/2" x 36 1/8"	1
Wedges	construction-grade spruce	1/2" x 1 1/4" x 5"	2

* Length indicates grain direction

Recommended Tools

chisel

bandsaw

drill

radial-arm saw

220-grit paper

Plan

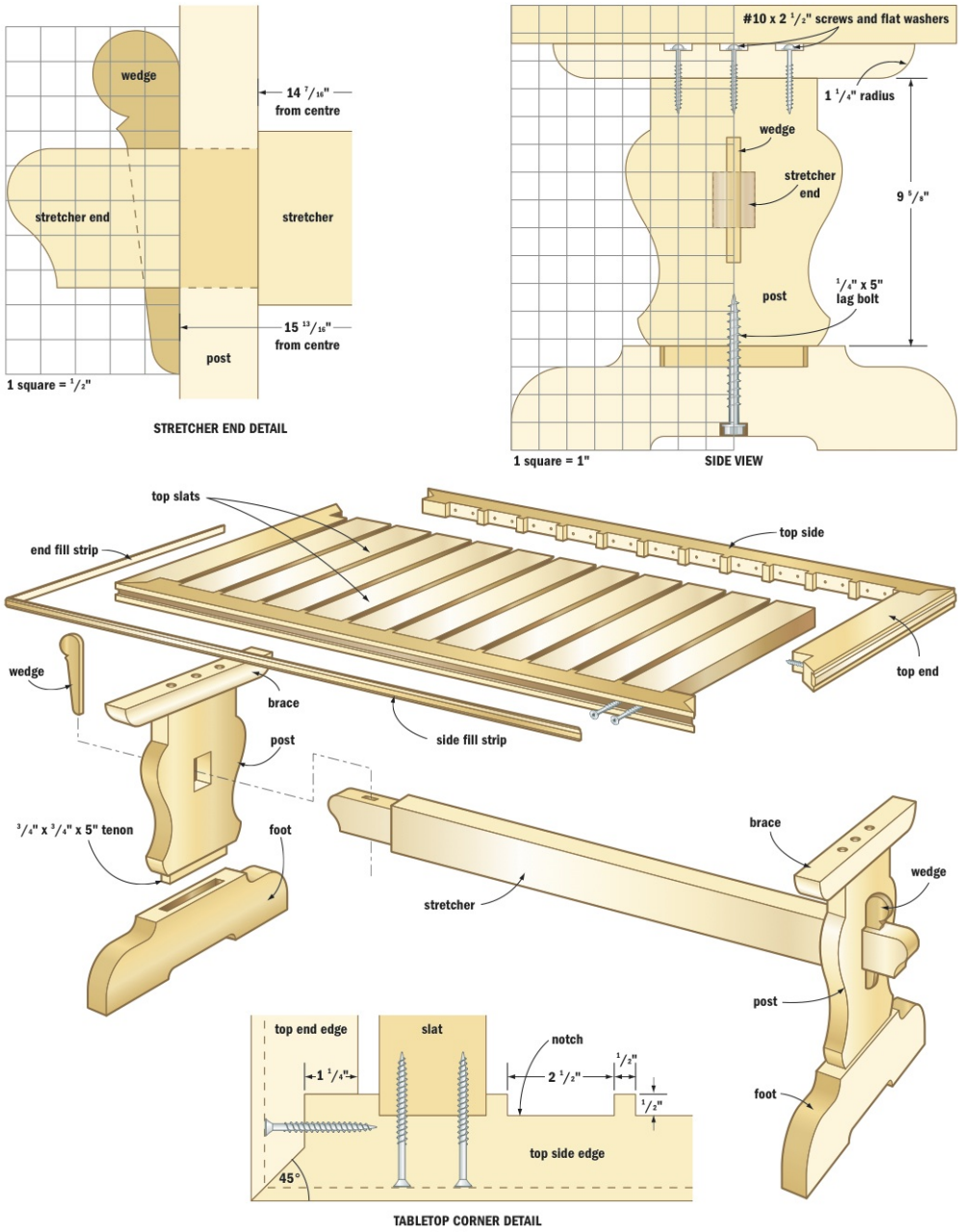

Illustration by Len Churchill